UTAH GEOLOGICAL SURVEY
a division of
UTAH DEPARTMENT OF NATURAL RESOURCES

Plate 1
Utah Geological Survey Miscellaneous Publication 97-2
Geologic Map of the Sheeppen Creek Quadrangle

Base map from the U. S. Geological Survey
Sheeppen Creek 7.5′ Quadrangle, 1986

Lori J. Douglas, Cartographer

SCALE 1:24 000

1 MILE
7000 FEET
1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

14°5′
250 mils

1997 MAGNETIC DECLINATION AT CENTER OF SHEET

UTAH

QUADRANGLE LOCATION

GEOLOGIC MAP OF THE SHEEPPEN CREEK QUADRANGLE, CACHE COUNTY, UTAH

by

James C. Coogan

1997

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Plate 2
Utah Geological Survey Miscellaneous Publication 97-2
Geologic Map of the Sheeppen Creek Quadrangle

DESCRIPTION OF MAP UNITS

Qa — Alluvium - *Gravel, sand, silt, and clay located above major streams (probably older than Qal) and at isolated locations in other drainage age uncertain*

Qal — Low-level alluvium - *Gravel, sand, and mud in valley bottoms of major streams.*

Qaf$_y$ — Younger alluvial-fan deposits - *Poorly sorted, clay- to boulder-sized material in crudely stratified, fan-shaped deposits.*

Qaf$_o$ — Older alluvial-fan deposits - *Rounded cobbles and pebbles from Wasatch Formation conglomerate, and angular pebbles and cobbles of Twin Creek Limestone in a fine-grained matrix.*

Qmc — Colluvium - *Angular, silt- to boulder-sized material from nearby outcrops.*

Qms — Landslides and slumps - *Angular blocks of basalt around Black Mountain, including some material from the Wasatch Formation; other deposits are largely derived from the Wasatch Formation.*

Qmt — Talus - *Matrix-free, angular, pebble- to boulder-sized debris.*

Basalt of Black Mountain

Tbf — Basalt flow - *Black, aphanitic, alkali-olivine basalt in a lobate exposure.*

Tbb — Basaltic breccia - *Breccia of black basalt and some white, partially silicified, oncolitic limestone from the Wasatch Formation in a white matrix of crystalline calcite, silica, and zeolite; exposure is linear.*

Tbd — Basalt dikes - *Black, aphanitic, alkali-olivine basalt with small (<0.8 inch [2 mm]) olivine phenocrysts; age about 29 million years.*

Wasatch Formation

Tw — Main body - *Poorly exposed red mudstone, and lesser sandstone and conglomerate.*

Twl — Limestone member - *Oncolitic and algal limestone, limestone flat-pebble conglomerate, and light-gray siltstone; interfingers with the main body such that this limestone map unit contains significant main-body lithologies in easternmost exposures.*

Twq — Quartzite conglomerate member - *Gray conglomerate with well-rounded cobbles of white and gray quartzite.*

Jp — Preuss Redbeds - *Only basal part exposed; red, non-resistant sandstone and shale, with salt in subsurface.*

Twin Creek Limestone

Jtgc — Giraffe Creek Member - *Light-, greenish-, and pinkish-gray, calcareous sandstone and gray, lime grainstone composed of fossil fragments.*

Jtl — Leeds Creek Member - *Gray, non-resistant, massive micrite with pervasive pencil cleavage; upper portion is fossiliferous, lime wackestone and packstone that grades into overlying Giraffe Creek Member.*

Jtw — Watton Canyon Member - *Gray, resistant, medium-bedded micrite and oolitic, lime wackestone and packstone with distinctive rectangular weathering pattern derived from spaced cleavage.*

Jtb — Boundary Ridge Member - *Lower and upper red-brown shales separated by massive, gray, oolitic limestone; capped by thin, oolitic limestone.*

Jtr — Rich Member - *Massive, micritic limestone with pervasive pencil cleavage; has undergone extensive structural thickening and thinning.*

Jts — Sliderock Member - *Upper half is lime packstone, wackestone, and micrite, grading up into the Rich Member; lower half is gray, resistant, sandy, lime packstone and grainstone with fossil fragments.*

Jtg — Gypsum Spring Member - *Red shale, siltstone, and sandstone; yellow sandstone; gray dolomite and brecciated dolomite; anhydrite in subsurface.*

Jn — Nugget Sandstone - *Reddish-orange, friable, medium- to fine- grained, quartz sandstone; capping by white, well-indurated sandstone is common.*

Ankareh Formation

Traw — Wood Shale Tongue - *Not completely exposed; exposures are bright-red siltstone and shale.*

CROSS SECTIONS ONLY
For units west of this quadrangle see Bear Lake South quadrangle (Coogan,1996)

Q — Quaternary undivided

Transitional Shelf Sequence - rocks of the Home Canyon thrust sheet; same as Inner Shelf Sequence for Jurassic through Mississippian rocks.

D — Devonian undivided - *Probably includes Leatham Formation (where present), Beirdneau Formation, Hyrum Dolomite, and Water Canyon Formation, or Three Forks and Jefferson Formations.*

Sl — Laketown Dolomite - *Thick-bedded dolomite.*

O — Ordovician undivided - *Probably includes Fish Haven Dolomite, Swan Peak Formation (where present), and Garden City Limestone.*

Є — Cambrian undivided - *As depicted, probably includes Upper Cambrian rocks, St. Charles and Nounan Formations.*

Inner Shelf Sequence - rocks of the Sheep Creek, Crawford, Absaroka, and other thrust sheets exposed east of the Bear Lake Plateau.

Jtc — Twin Creek Limestone - *Mostly limestone, with some shale; siltstone, sandstone, dolomite, and anhydrite-bearing member at base (Gypsum Spring).*

Jn — Nugget Formation - *Sandstone.*

Traht — Wood Shale Tongue of the Ankareh Formation, Higham Grit, Timothy Sandstone and Portneuf Limestone Members of the Thaynes Formation, and Lanes Tongue of the Ankareh Formation - *Mixture of shale, siltstone, sandstone, and limestone.*

Trt — Thaynes Formation - *Shale and limestone.*

Trtw — Woodside and Dinwoody Formations - *Shale and siltstone.*

PPM — Phosphoria, Wells, and Amsden Formations - *Limestone, chert, phosphatic shale, and sandstone.*

Mm — Madison Group - Includes Mission Canyon Formation (= Brazer Dolomite) and Lodgepole Limestone - *Thick-bedded dolomite and limestone.*

Dd — Darby Formation - *Shale, sandstone, and dolomite; sometimes called the Three Forks and Jefferson Formations in the Cordilleran fold and thrust belt.*

Ob — Bighorn Dolomite - *Thick-bedded dolomite.*

Cg — Gallatin Limestone and Gros Ventre Formation - *Thin-bedded, silty limestone, oolitic limestone, and shale.*

Cf — Flathead Sandstone - *Arkosic sandstone.*

pЄx — Crystalline basement rocks - *Precambrian*

MAP AND CROSS SECTON SYMBOLS

Contact - *dashed where approximately located; dotted where concealed*

Fault - *dashed where approximately located; dotted where concealed; queried where uncertain; arrow shows dip*

Thrust - *sawteeth on upper plate*

Normal - *ball and bar on downthrown side*

Arrows on cross section show relative motion. *Double-headed arrows indicate separate slip episodes with opposite slip directions*

Folds - *dashed where approximately located or inferred; dotted where concealed; arrow shows plunge direction where known*

Anticline

Overturned Anticline

Synformal (inverted) Anticline

Syncline

Overturned Syncline

Antiformal (inverted) Syncline

Monocline - *showing anticlinal bend, A; showing synclinal bend, S*

Strike and Dip of Bedding - *in structurally complex areas ball used when top of bedding is known*

Inclined; *symbol on right used where top of bed can be distinguished*

Overturned; *symbol on right used where top of bed can be distinguished*

Vertical

Horizontal

Strike and Dip of Cleavage

Landslide Scarp

Dry Hole

Ancient Shoreline

"D" marker of Gypsum Spring Member of Twin Creek Limestone

Gravel Quarry

Ⓡ Radiometric Sample Locality

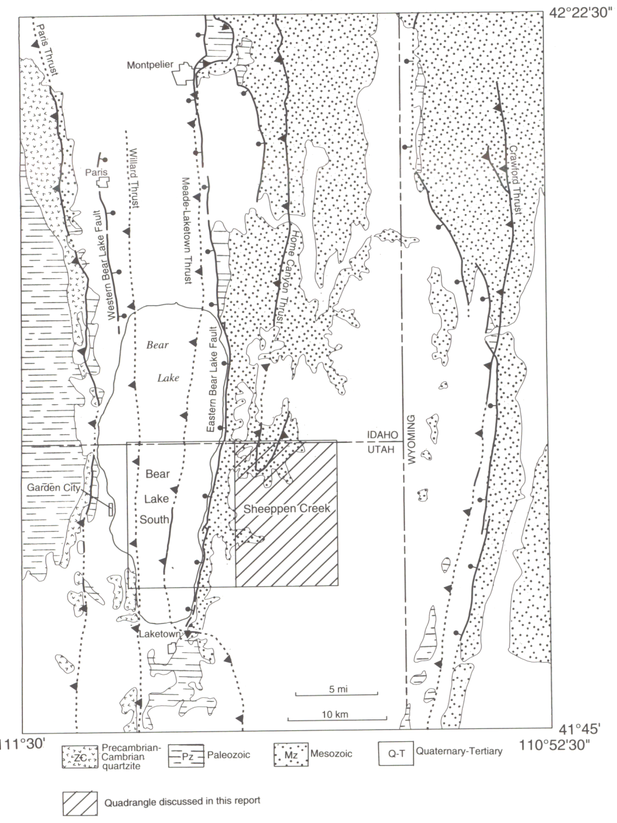
Ⓒ Chemical Sample Locality

B — B′ Line of Cross Section

Line of Measured Section - *dashes shown where offset*

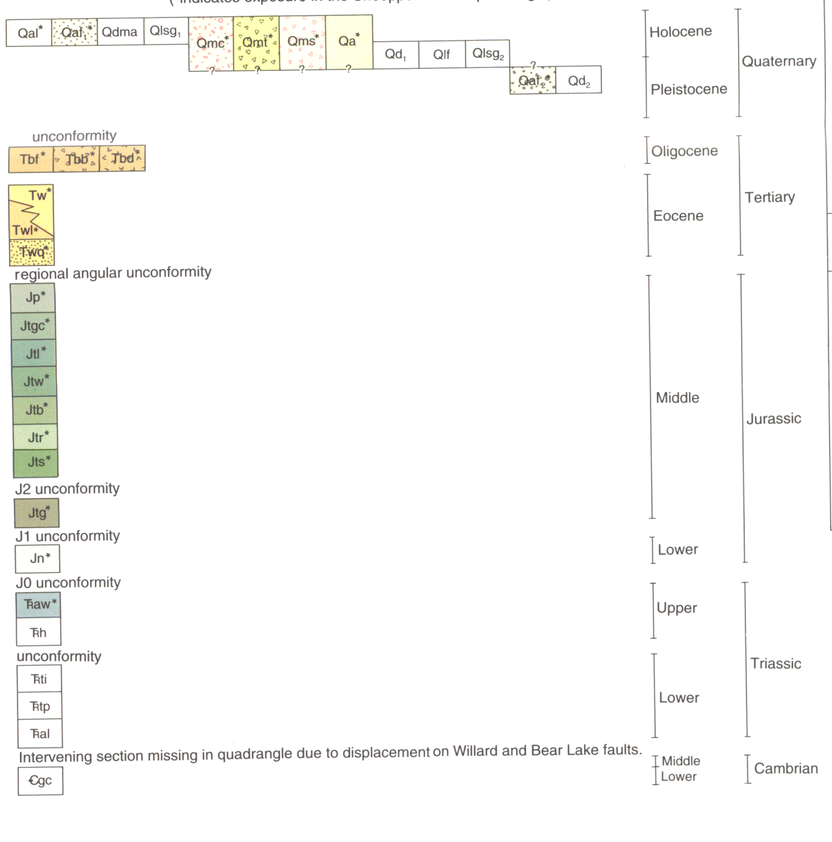
Drill hole on cross section showing bore-path deviation and dip from dip meter survey

INDEX MAP



CORRELATION OF MAP UNITS

(*indicates exposure in the Sheeppen Creek quadrangle)



STRATIGRAPHIC COLUMN

(*indicates exposure in the Sheeppen Creek quadrangle)

Time Stratigraphic Units		Formation and Members		Symbol	Thickness feet (meters)	Lithology
Quaternary		Surfical deposits		Q*	0-50 (0-15)	
Tertiary	Olig.	Basalt of Black Mountain		Tbf*, Tbb*, Tbd*	0-40 (0-12)	unconformity
	Eocene	Wasatch Formation	Main body	Tw*	0-700 (0-210)	
			Limestone member	Twl*	0-400 (0-120)	oncolites in limestone
			Quartzite Conglomerate Member	Twq*	0-100 (0-30)	regional angular unconformity
Jurassic	Middle	Preuss Redbeds		Jp*	0-200 (0-60)	salt zone in wells
		Twin Creek Limestone	Giraffe Creek Member	Jtgc*	300 (100)	
			Leeds Creek Member	Jtl*	1550 (475)	
			Watton Canyon Member	Jtw*	800 (245)	
			Boundary Ridge Member	Jtb*	265-300 (80-90)	oolitic
			Rich Member	Jtr*	550-730 (165-220)	
			Sliderock Member	Jts*	250-500 (75-150)	
			Gypsum Spring Member	Jtg	350 (105)	J2 unconformity; "D" marker anhydrite zone in wells
	Lower	Nugget Sandstone		Jn*	1300 (400)	J1 unconformity
Triassic	Upper	Ankareh Formation	Wood Shale Tongue	Traw*	400-570 (120-175)	J0 unconformity ?
		Higham Grit		Trh	135 (41)	
	Lower	Thaynes Formation	Timothy Sandstone	Trti	125 (38)	unconformity
			Portneuf Limestone	Trtp	65 (20)	chert
		Ankareh Formation	Lanes Tongue	Tral	508-580 (155-175)	Base not exposed
Intervening Lower Triassic through Cambrian rocks not exposed in quadrangles. See cross sections.						Top not exposed
Cambrian	Middle	Geertsen		Cgc	1200+ (365+)	
	Lower	Canyon				
		Quartzite				Base not exposed

Plate 3
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Geologic Map of the Bear Lake South Quadrangle / Sheeppen Creek Quadrangle

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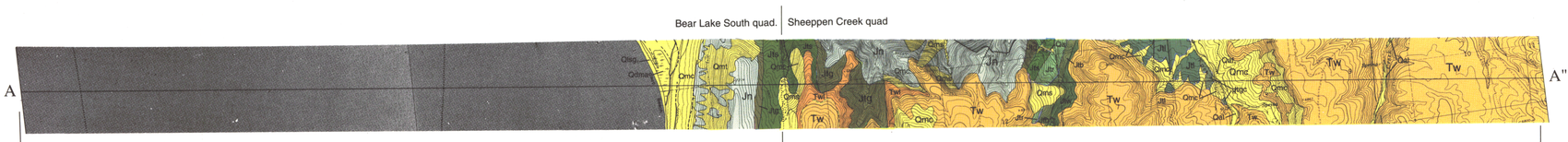

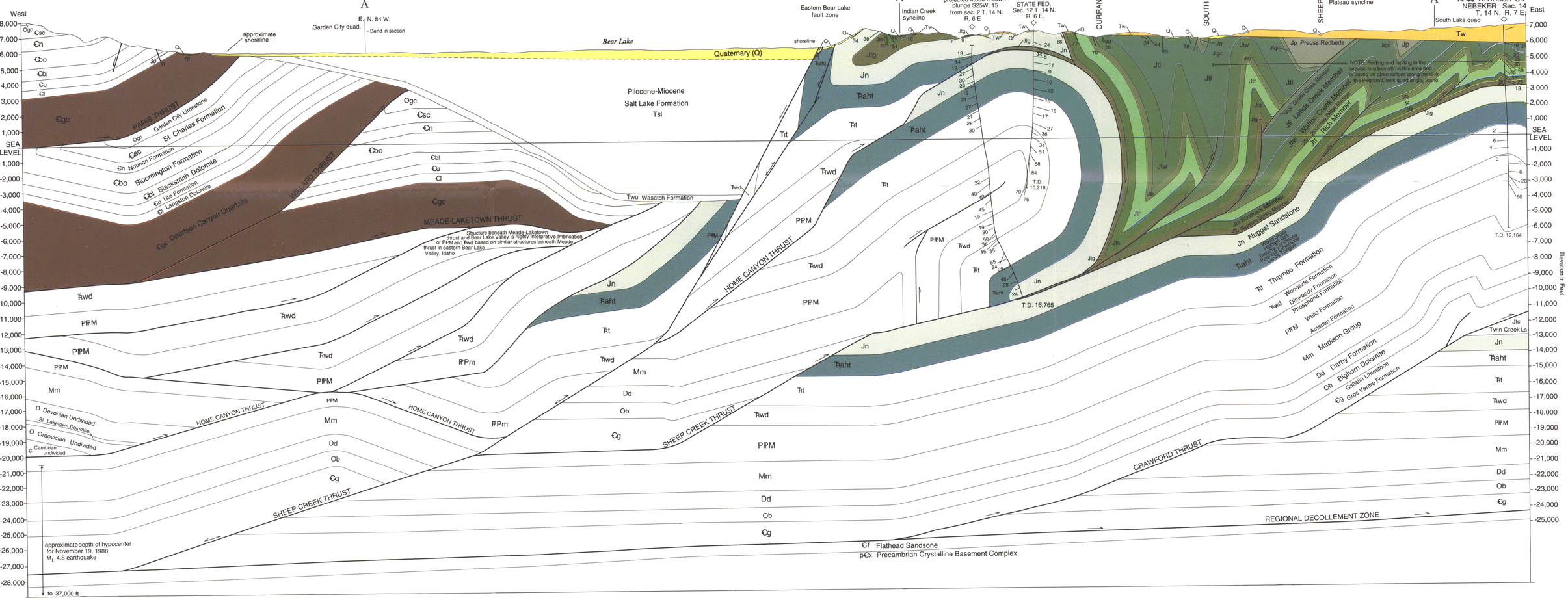

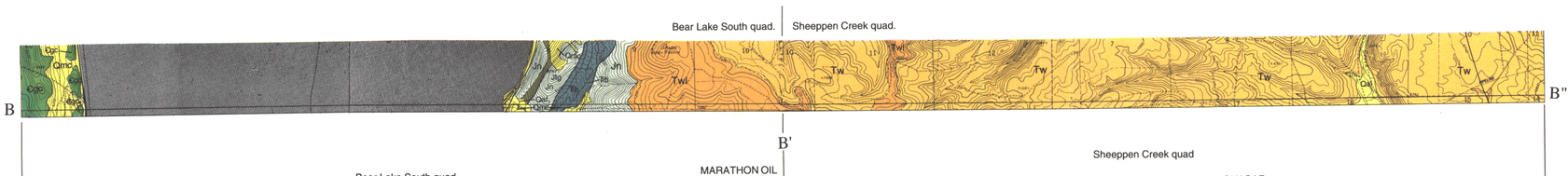

SCALE 1:48,000

1 0 1 MILE

1000 0 1000 3000 5000 7000 FEET

1 5 0 1 KILOMETER